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ABSTRACT

Title: "An Experimental Study of Yoga Therapy on Varicose Vein".

Background: Veins that are elongated, tortuous, and have trouble returning blood to the heart are symptoms of varicose veins. Varicose veins have been growing at an alarming rate in recent years, becoming one of the world's major vein health hazards. This condition affects the veins, particularly in the lower limbs where the venous circulation is against the pull of gravity. The present study is chosen to find out an alternative authentic, drug-free, and cost-free approach through yoga therapy, to assess the effect of yoga therapy on varicose veins in lower limbs, and the improvement of the quality of life.

Objectives of the study:

- To assess the effect of yogic interventions on varicose vein patients measured by Doppler Ultrasound test.
- The effect of yoga therapy on varicose veins.

Methodology: Ethical Clearance was obtained from the Committee on Institutional Human Ethics for randomized control trial. The study design consisted of the experimental group (n=28) and control groups (n=28). A yoga therapy session of 60 minutes was introduced as an intervention for the 90 days regular employees of KSRP 7th battalion (Karnataka State Reveres Police) Assaigoli, Mangalore, the subjects of this research. Both groups were subjected to pre and post-test using the perceived questionnaires and doppler ultrasound test.

Results: 90 days of Yoga Intervention resulted in significant changes in the score of the perceived parameters of questioners and doppler ultrasound test in the experiment group ($p<0.001$) compared to the control group.

Conclusion: Depending on the results obtained, it can be concluded that regular yogic practices can improve the muscular pumping action, thereby improving the venous return to the heart and curing the problem of varicose veins. Yoga therapy is effective for varicose veins management among KSRP employees. This will be of great help in the promotion of workforce wellness and productivity in the KSRP working sector.

Key Words: Varicose veins, Yoga therapy, Questionnaires, and Doppler ultrasound.

Chapter – 01. Introduction.

1.1.Introduction:

Yoga originated in India thousands of years ago, and in this day and age, an alarming awareness of health and natural remedies among people has been observed through yoga and pranayama, which has been proven an effective method for improving health as well as the prevention and management of diseases. Yoga's therapeutic qualities are being investigated as scientific research into the practice grows (Sengupta, 2012).

Yoga is the science of maintaining a healthy mind in a healthy body and has always been known as a preventive, promotive, and curative therapy. It opens a realm of beatitude and liberation from sorrows and pains for man. The main purpose of yoga is to elevate man and realize his inherent potential. The practice of yoga leads naturally to the modification of thoughts and behaviours and a new realization of the purposes and processes of life. This holistic approach leads to better health and the eradication of physical and mental disorders (Balayogi Bhavanani Sri Balaji Vidyapeeth et al., 2007).

Varicose veins are a condition characterized by elongated, tortuous veins and a hampered venous return to the heart. This condition affects the veins of especially lower limbs as here the venous circulation is against the force of gravitation (Malvika et al., 2015). The veins of the lower limbs are characterized by the presence of valves that prevent the backflow of blood to the foot. Here the blood is squeezed into the veins by the pumping action of the muscles (MS, 2017). As age advances, the valve loses its competence and the venous return is hampered. This especially props up in people who stand for a long time standing like the traffic police, Farmers, housewives, teachers, obesity, pregnancy, heredity, tailors, who constantly peddle sewing machines, tobacco uses, and the previous history of varicose veins. Yoga Therapy helps to improve muscular action and thereby enhance blood circulation (O'Flynn et al., 2014).

2.2. Purpose of Study:

There are only a few studies on varicose veins in the area of yoga and yoga therapy. The majority are in the field of Ayurveda, Homeopathy, and clinical-based research on varicose veins. Therefore, a new experiment to study yoga therapy's effect on the varicose vein.

2.3. Importance of Study:

According to many vascular disease study publications, 15-20% of the population in India suffers from varicose veins. This condition affects women four times more than men. Many occupations have sprung up where people are expected to stand or sit for extended periods. These people are more likely to develop varicose veins. The increased prevalence is attributed to a lack of preventive care (Kodi & Sangita, n.d.).

2.4. Background of Study:

Varicose veins are an important phenomenon in both sexes by which physical and mental changes occur in them. Humans are at high risk throughout their lower legs. Various physiological and psychological problems are faced by them. So many reasons for these problems are prolonged standing or sitting, Family History or Heredity, Pregnancy, former, Overweight or Obesity, etc. This results in negligence and frustration or physical and psychological illnesses (Meissner et al., 2007).

2.5. Objective of the Study:

- To assess the effect of yogic interventions on varicose vein subjects measured by Doppler Ultrasound test.
- The effect of yoga therapy on varicose veins.

1.6. Conclusion:

According to the data shown above, varicose veins are becoming increasingly widespread worldwide as a result of changing food choices and lifestyles connected to rapid urbanization as a result of rapid urbanization. Yoga practice regularly helps to regulate normal blood circulation. The physiology of the body is governed by better digestion, absorption, and ejection. Certain asanas, pranayama, and relaxation practices will stimulate the body's veins and valve competency system, resulting in a reduction in varicose vein disorders.

Chapter – 02. Overview of Varicose Veins.

2.1. Introduction:

This chapter provides an introduction to varicose veins. Part, one discusses varicose veins from a modern standpoint, definitions, causes, symptoms, and modern medicine management, whereas part two discusses yogic management and the mode of action of yoga therapy for varicose veins.

Meaning: When a vein is dilated, lengthened, and tortuous, it is said to be varicose. This disease affects the veins of the legs, as well as the spermatic Oesophageal and hemorrhoid veins. **Definition:** The term varicose is derived from the Latin word meaning - dilated". One of the most used definitions has been according to (Kryle et al., n.d.) "any dilated, elongated, or tortuous veins, irrespective of size" and the other from the Basle study,

According to Ayurveda Siraj Granthi (Varicose Veins): According to Charaka: (Sira) Dhamanis is Pulsating Structure. Srotases are Secreting Structures. Sirsa which allows the flow of blood. (Ch.su -30/12). According to Vagbhata: (Sira) Those which are blue, yellow, or black, warm to rakta and bleed quickly, carry rakta. (A.S.su - 6/8). According to Vagbhata: (Granthi) Granthi is a round and huge mass-like swelling caused by vitiation of meda, mamsa, and rakta. (A.S.U - 34/2). According to Sushruta: (Granthi) A round, knotty elevated swelling that is caused by mamsa, rakta, and meda. (Su. Ni – 11/3)

2.2. Anatomy and Physiology of Veins Lower Limb:

The Veins of the lower limb are subdivided like that of the upper limb into two viz. Superficial and deep veins. The superficial veins are replaced immediately under the skin in superficial fascia whereas the deep veins accompany the arteries. Both sets are provided with valves, which are more numerous in the deep veins than in the superficial veins. Varicosity commonly occurs in the superficial regarding these subjects. Knowing the superficial when is of the most importance.

The major superficial veins of the lower limbs are the Great Saphenous veins and the Small Saphenous veins. The great or Long saphenous vein is the longest in the body, beginning in the medial marginal vein of the foot and ending ends in the femoral Vein about 3 cm. Below the inguinal ligament. The valves in its number from ten to thirty and are more numerous in the thigh. The main drainage to this vein is the medical managerial veins in the ankle, a small saphenous vein in the leg, also the perforating veins in the knee at the ren of the tibial malleolus, and the major tributaries of this vein are distributed in the thigh reason.

The deep external pudendal vein joins the great saphenous vein at its termination in the saphenous opening the small saphenous vein begins behind the lateral malleolus as a communication of the lateral vein of the foot. Major tributaries are at the popliteal fossa, popliteal veins, and also from the back of the legs send several branches upward and medially to join the great saphenous vein. It processes from seven to thirteen valves one of which is found near its termination in the popliteal fossa. It ascends upward to reach the great saphenous vein upper part of the thigh and sometimes it branches the sum of which joins the great saphenous vein, the other popliteal vein, or the deep posterior veins of the thigh.

2.3. Muscles Pumps and Venous Returns:

When the man stands at rest, the valves in the veins are all open permitting continuous forward flow of blood towards the heart, likewise permitting the full hydrostatic effect of the continuous column of blood. When the muscles contract, the veins column is squeezed, and the rise of the pressure process of blood towards the heart out of each successive segment, the valves prevent backflow. When the man stands at rest, the valves in the veins are all open permitting continuous forward flow of blood towards the heart, likewise permitting the full hydrostatic effect of the continuous column of blood. When the muscles contract, the veins column is squeezed, and the rise of the pressure process of blood towards the heart out of each successive segment, the valves prevent backflow. As soon as the muscle relaxes, the depleted Segments are permanently refilled from the more peripheral venous channels and also from the superficial veins their valued communicating channels. The more frequent and powerful rhythmic moments are the more efficient this MUSCLE PUMPING (Meissner, n.d.).

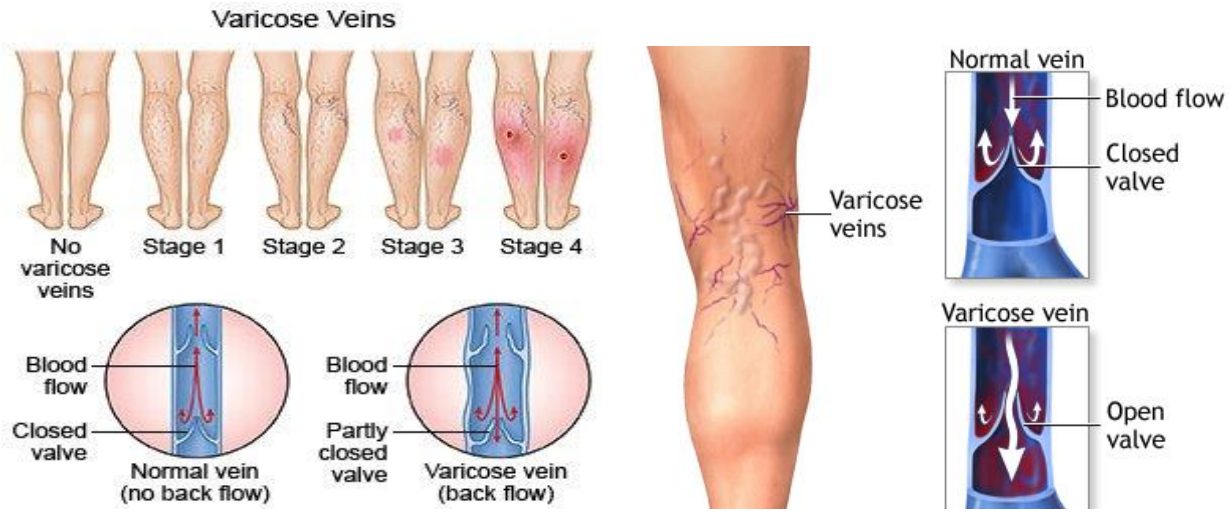

Image source: https://www.google.com/search?q=varicose+veins+images&source.

2.4. Classification of Varicose Vein:

John Porter proposed a classification for venous illness, similar to the TNM (tumor/node/metastasis) classification for cancer, during the Fifth Annual Conference of the American Venous Forum in 1993. The American Venous Forum established a categorization system in 1994 to help in the globally consistent identification and comparison of chronic venous illnesses. The categorization was adopted into the "Reporting Standards in Venous Disease" in 1995. The categorization was revised in 2004, retaining the core CEAP categories but improving the underlying information. CEAP stands for Clinical (C), Etiological (E), Anatomical (A), and Pathophysiological categorization (P) (Lurie et al., 2020).

2.5. Signs and Symptoms of Varicose Veins:

Varicose veins often don't cause symptoms in people other than the obvious and unattractive appearance. Varicose veins can get worse over time, but this usually happens very gradually. The most noticeable indication of varicose veins is a twisted, blue, or purple vein that is just below the surface of the skin. Symptoms consist of swollen veins: Veins that are twisted, bulging, and rope-like are frequently blue or purple. legs, ankles, and feet have them just underneath the skin's outer layer. They may grow in groups. Spider veins, tiny red or blue lines, might be seen close by leg muscles that feel heavy: Especially after physical exertion, the leg muscles may feel heavy, exhausted, or sluggish. Itching: Itching may occur near varicose veins (Kodi & Sangita, n.d.).

2.6. Causes of Varicose Veins:

Varicose veins develop as a result of increased vein pressure, which affects the venous valves (cup-shaped membranes that prevent blood from sliding back). These defective valves make veins more prone to blood pooling, a condition in which blood is ineffectively pumped back to the heart and gathers in the legs, ankles, and feet. The following are some of the risk factors that contribute to increased venous pressure or valve damage: (Brake et al., 2013)

2.7. Complications of Varicose Veins:

Many persons with varicose veins never have any issues and may not require treatment. People can control their symptoms daily without medical attention. But, if issues do arise, they need to be handled very away. The onset of these consequences might be years away (Manerikar et al., 2018).

2.8. Diagnosis of Varicose Veins:

Varicose veins are identified depending on how they look. A primary care physician's physical examination is the first step in the diagnostic procedure, which is followed by a few tests to see whether any problems have arisen as a result of the severity of the varicose veins (*Diagnosis and Treatment of Varicose Veins in the Legs KCE Reports 164C*, n.d.).

2.9. Management and Treatment of Varicose Veins:

Depending on the patient's health and the severity of the disease, there are several varicose vein therapy methods available. A few conservative therapy alternatives are advised to control and alleviate the patient's symptoms if their medical condition does not allow for a decisive course of action.

Chapter – 03. Yogic Management of Varicose Veins.

3.1. Importance of Yoga Therapy:

Yoga therapy is the application of Yogic concepts to a specific person to obtain the intention of obtaining a certain spiritual, psychological, or physiological goal. The means utilized are composed of intelligently designed stages that include but are not limited to, the educational teachings of Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana, and Samadhi. Meditation, literary study, spiritual or psychological therapy, chanting, visualization, prayer, and ritual are also used to satisfy the requirements of the individual. Individual diversity in age, culture, religion, philosophy, professions and mental and physical health are all respected in yoga therapy (Pearson & Taylor, n.d.), (Veṅkaṭareḍḍi, 2005).

3.2. The applications and Perspective and Principles of Yoga Therapy:

- **Yoga therapy is used from three perspectives:**

a. Practicing yoga to develop muscular strength, mental focus, the ability to perform challenging postures, the capacity to perform for an extended amount of time, etc. The application of shakti-krama is what this is known as.

b. Practicing yoga to treat specific diseases, such as purifying the body's organs (doshas), energy centers (chakras), and pathways (nadis) of impurities, The chikitsa-krama is this.

c. If an illness occurs, it must be treated (chikista).

d. Protection is required even if there is no illness (rakshana).

e. Raining is required if the disease is not present and one has learned how to defend oneself (Shikshana).

f. The practice of Yoga to transcend beyond the physical to comprehend what is beyond the limiting sense of self; to recognize one's actual self as an unchanging Witnessing Presence (Purusha) of all that is changing (Prakriti). This is known as the adhyatmika-karma, adidaivika-karma, and adibhoutica-karma application.

3.3. Yogic and Ayurvedic View of Varicose Veins:

The Sira Vikriti (venous disorder) (Sirakautilya or Kutilsira) and its treatment (Sira Vikriti) are described in detail in ancient Indian texts like the Ashtanga Hrdaya, Charaka Samhitha, and Vghbhata. Siragranthi, which can be correlated to Sira Vikriti and is caused by aggravated Vata dosha, is a vein disorder that is characterized by pro Varicose veins developed as a result of any situation that places too much pressure on the legs or abdomen, such as prolonged

stationary standing. Insufficient blood flow, weakened vein walls, weak valves Iliac vein compression, and hormonal changes, such as during pregnancy, The reasons for the diseased veins include obesity, a sedentary lifestyle, chronic constipation, excessive physical activity, etc (Chauhan & Patra, 2021).

3.4. Pathogenesis According to Yoga, and Ayurveda:

Varicose veins are mainly a Vata disease produced by an imbalance in Vyana Vayu, which causes increased pressure in the veins, affecting the valves and flexibility. Vyana Vayu, one of Vata's sub-doshas, is in charge of carrying oxygen-rich blood from the heart to the body's cells via the arteries. It also controls the flow of deoxygenated blood via the veins from the body's cells back to the heart. The veins rely mostly on surrounding muscles and a network of one-way valves to return blood to the heart. The cup-shaped valves of a vein alternately open to let blood pass through and close to stop blood from going backward as blood circulates through it. Veins and valves become rigid and lose their elasticity when Vyana Vayu is out of equilibrium due to excessive dryness. It becomes more difficult for the muscles to return blood to the heart when blood pressure is high because the veins enlarge and the valves lose their capacity to seal. Leg superficial veins, which get less muscular support than deep veins, collect blood (T. Sharma, n.d.).

3.5. Importance of Yoga Therapy on Varicose Vein:

Understanding and avoiding varicose veins is the focus of yoga treatment for varicose veins. Yoga's entire system focuses on good breathing and circulation in the body, which is necessary for a healthy body and mind. As a result, rather than treating the problem, it is critical to determine the underlying reason by consulting an expert (Mishra, 2011), (Swami Kuvalayananda, & Dr S L Vinekar. (1963)., n.d.). "Science teaches about the Law of Gravitation, which pulls the energy downwards but yoga teaches about the Law of Grace that which raises the energy upwards".

A combination of inverted and other conventional asanas that promote muscular movements, such as calf squeezing, might be an excellent sequence for yoga treatment for varicose veins. Individuals with high blood pressure should practice inverted asanas with the assistance of a qualified yoga instructor (Fitness, 2004), (Krishna Bhat, K. (2006)., n.d.).

3.6. Yogic Management of Varicose Veins:

According to Yoga, lifestyle is one of the leading causes of disorders. Varicose veins are more frequent in women than in males and are genetic. Pregnancy, obesity, menopause, aging,

long periods of standing, leg injuries, abdominal straining, and crossing legs at the knees or ankles are all risk factors. Varicose veins can be caused by a variety of conditions (Yogic Management of Common Diseases, n.d.).

3.6.1. According to Sadvimshathi Tattva's Theory:

This theory describes how the entire world/universe evolved. Purusha and Prakriti join as a result of a disruption in the triguna balance (Sattva, Rajsa, and Tamasa). As a result, Mahat, Ahankara, Manasa, five Jnanendriyas, five Karmendriyas, five Tanmatras, five Panchamahabhutas, and Iswar as the 26th entity manifest. Sensor organs, motor organs, Panchamahabhutas, and the citta all have a connection. There is a way to get to the bottom of illness manifestations

3.6.2. Accordingding to Panchakosha Theory:

According to this theory, the human body has an aggregate of five sheaths or kosh called Panchakosh. These are Annamaya Kosha Pranayama Kosha, Manomaya Kosha, Vijnanamaya Kosha, and Anandamaya kosha. Any abnormalities in annamaya kosha, pranamaya kosha, or manomaya kosha are caused by Varicose veins. Abnormalities in pranamaya kosha are caused by the improper circulation of oxygenated blood. Unhealthy and unpleasant food and irregular breathing patterns lead's to Panchamahabhuta (i.e., an increase of Prithvi, Ap, and tejas and a decrease of Vayu and, Akasha) and in Tridosha. The regularity of breathing patterns and consumption of Pathya and Mithahara foods aids in the proper circulation and functioning of the Pranamay kosh and Annamaya kosha.

3.6.3. According to Tridosa's Theory:

The tridoshas in the human body according to the tridosh theory are vata, pitta, and Kapha. Health is a state where there is a balanced condition of these doshas and its imbalance is considered as diseased or ill health. They unitedly sustain the body. The discrepancy of vata in the body leads to varicose veins. In the body parts like calf muscles, and thighs resides the vyana vayu and its malfunction causes vata to become vitiated. The Vyana vayu is responsible for the proper circulation system.

3.7. Mode of Action of Yoga Therapy on Varicose Veins:

3.7.1. Effect of Asanas on Varicose Veins:

The practice of asana brings steadiness as well as improves overall health quality, and gives lightness to the body and mind. Because asanas are the first component of hatha yoga -

हठस्य प्रथमाङ्गत्वादासनं पूर्वमुच्यते। कुर्यात्तदासनं स्थैर्यमारोग्यं चाङ्ग-लाघवम् - HP-1.17, and the third limb of ashtanga yoga - **स्थिरसुखम् आसनम्** - PYS-2.46, it helps to reduce the dualities of both body and mind - **ततो द्वन्द्वानभिघातः** - PYS-2.48. The practice of asanas helps to the purification of blood vessels, and circulation of blood throughout the body and helps to remove toxic/impurities from various parts of the body.

3.7.2. Effect of Pranayamas on Varicose Veins:

Pranayama means the regulation of breath. It is the coordination of pran and citta, that helps the mind work properly (Kuvalayanada, 1983). the text says - **शुद्धमेति यदा सर्वं नाडी-चक्रं मलाकुलम्** - HP - 2.5. and **प्राणायामं ततः कुर्यान्नित्यं सात्त्विकया धिया** - HP 2.6. the whole group of nadis which are gets purified by the proper (regulating) Pranayama also should practice regularly, so that the impurities of nadis are removed. It's an authentic way of removing the impurities of nadis - **नाडी-विशुद्धिर्हठ-सिद्धि-लक्षणम्**- HP-2.8, and one of the great benefits of the pranayama.

3.7.3. Effect of Relaxations Techniques on Varicose Veins:

Relaxation techniques can be achieved through several approaches. This maintains physiological and psychological relaxation. The entire veins system and muscles are relieved since mental stimulation is needed to relieve physical pain and body disturbances during symptoms of varicose veins through proper relaxation and after the practice of asana and pranayama. The Shavasana is an effective technique to reduce the symptoms of veins and also other systems (**उत्तानं शबवद्भूमौ शयनं तच्छवासनम्। शवासनं श्रान्ति-हरं चित्त-विश्रान्ति-कारकम् ॥). Shavasana-1 and 2 –** It relieves physical and mental stress. Helps to repair the cells, and tissues and releases stress, relaxes the muscles, etc.

3.7.4. Diet for Varicose Veins:

In the yoga system, the physical body is known as Annamaya Kosha or the food sheath. Anna is referring to the food consumed **(As the food so the mind, As the mind so the Man)**. As a result, food functions as both nature and medicine for the human body. Food represents vitality because it is the source of life. Food is required for survival to live, and all life eventually becomes food for a new life, perpetuating the creation cycle. lifestyle changes like Ahara, Vihara, Achara, and Vichar **(युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु। युक्तस्वप्नावबोधस्य योगो भवति दुःखहा।।).** So yogic diet is a scientific method for the preventive, curative, and promotive of better health (*Radhakrishnan, P. (1995).*, n.d.),.

3.8. Conclusion:

Based on the data above, it is evident that varicose veins are a disease of lifestyle. It causes many complications in life and weakens the human veinous system. Although yogic practices have been more preventative, curative, and promotional methods for varicose veins, the yogic lifestyle, specific asanas, and pranayama will stimulate the venous system of the body as a result of which will reduce the complication of varicose veins state.

Chapter – 04. Review of Literatures

4.1. Review of Literature:

This chapter investigates the extant literature on the subject. The literature was compiled from a range of sources, including classical writings, Holy Scriptures, texts based on the Holy Scriptures, research activities carried out by various investigators, and published articles, books, and journals. Before delving into the subject's core, it is critical to examine contemporary advancements in this field. Yoga treatment must be proven to be feasible as an alternative therapy for enhancing the quality of life of varicose veins subjects.

4.2. **Historical Aspects:**

(Eber's Papyrus (1550 B.C.) Studied, the first written reference to varicose veins appears to be the varicose veins illustrated on a votive table from **Askepieion** in Athens and the first patient who underwent an operation for his varicose vein appears to be Canus Marius, the Roman tyrant. **(Hippocrates (460-377 B.C.)** Studied, the use of compressive bandages and was the advisor of small punctures in varicose veins, which should not be opened freely because of the possibility of ulceration and infection. (**Aurelius Cornelius Celsus - 25 B.C.-A.D. 50).**

The effect of various theories on the history of varicose veins and leg ulcers has been observed. The Humoral Theory: Galen's theory of humor is taken from Hippocrates, together with the idea of to and fro movements of blood with its various spirits dominated medical thought for fifteen centuries. Varices were attributed to the weight of stagnant gross 'blood on the walls of veins. 'Haly Abbas' - believed they were filled with black bile and occurred in those who worked hard and stood long. France and Heister (1768) considered ulcers to be a drain for humor which if not expelled, would cause serious illness. 'Ambroise Pare and Wertmuller' believed menstrual blood is `gross' and collects in the leg during pregnancy, causing varicose veins and ulcers.

4.3. Review of Modern Literature:

The patient in this study participated in yoga treatment sessions, and both yoga and food are important. Yoga enhances blood flow, decreases vein swelling, and reduces varicosity of the veins. The diet also aids in preventing blood clots (Naragatti, 2019). The lower extremity varicose veins that are the subject of this investigation are being treated. The clinical research is summarised in this study. Advantages and disadvantages of various treatment procedures for varicose veins (Guo et al., 2019). There are numerous clinical spectrums, ranging from minor

symptoms to major ones like venous ulcers. This study reviews the pathophysiology of the lower extremities and emphasizes the use of duplex ultrasonography for radiofrequency ablation and diagnosis (Yun et al., 2018). A few occupations are risk factors for varicose veins. The goal of the current study was to look at the numerous risk factors for varicose veins as well as their incidence (Sharma et al., n.d.).

4.4. Review of classical literature:

A review of the literature is an important part of the research. Classical texts are the main sources that give knowledge about yoga. A review of classical literature is done to prove the facts mentioned in the classical texts. The concept of health, disease, lifestyle, and deities are explained in these texts. Maharshi Patanjali, in his Yoga sutra, enumerates the nine obstacles as imperfections in the health of the body and the state of mind. **व्याधिस्त्यानसंशयप्रमादालस्याविरति-भ्रान्तिदर्शनालब्धभूमिकत्वानवस्थितत्वानि-चित्तविक्षेपास्तेऽन्तरायाः** - (PYS-1/30). Hence, the science of yoga begins with the philosophy of sorrow. It aims at the purification of body and mind and ends in Emancipation. While explaining the effect of yoga, he states by the regular and devoted practice of the eight components of yoga the impurities of the practitioner's body, mind, and intelligence are removed and the spiritual light or wisdom is bestowed.

दुःखदौर्मनस्याङ्गमेजयत्वश्वासप्रश्वासा विक्षेपसहभुवः (PSY-1/31). Non-retention of concentration is accompanied by grief, mental distress, tremor in the body, and irregular breathing. Patanjali describes seven techniques for dealing with vikshepas (distraction) and achieving mental well-being. Some examples are provided below, **मैत्रीकरुणामुदितोपेक्षाणां सुखदुःखपुण्यापुण्यविषयाणां-भावनातश्चित्तप्रसादनम्** – (PSY-1/33), Friendship, mercy, joy, and indifference, when considered about subjects, calm the Chitta. These things are thought of as happy, unhappy, good, and evil, respectively. (Swami, n.d.), (Swamy, 1970), (Saraswati, n.d.), (*Swami Vivekananda. (1982).*, n.d.), (*Hariharananda Aranya. (2014).*, n.d.), (*Oman and Maharaj. (2013).*, n.d.), (*Oman and Maharaj. (2013).*, n.d.), (*I.K. Taimni. (1972).*, n.d.), (*Ramaprasada. (2000).*, n.d.), (*Swami Adidevananda (2014).*, n.d.), (*Swami Prabhavananda. (2008).*, n.d.), (*Swami Satyananda Saraswati. (2016).*, n.d.), (*Swami Vivekananda. (2017).*, n.d.).

हठस्य प्रथमाङ्गत्वादासनं पूर्वमुच्यते । कुर्यात्तदासनं स्थैर्यमारोग्यं चाङ्ग-लाघवम् ॥ (HP-1/19), Asana is described first because it is Hatha Yoga's first accessory. It should be practiced to

improve one's health, mobility, and posture. **शुद्धमेति यदा सर्वं नाडी-चक्रं मलाकुलम् । तदैव जायते योगी प्राण-संग्रहणे क्षमः ॥** (HP-2/5), Only after the entire group of nadis, which are (usually) full of impurities, is purified, does the yogi become capable of (properly) regulating Prana. **प्राणायामं ततः कुर्यान्नित्यं सात्त्विकया धिया । यथा सुषुम्णा-नाडीस्था मलाः शुद्धिं प्रयान्ति च ॥** (HP-2/6), As a result, the pure heart (yogi) should regularly practise pranayama to remove impurities in the susumna. **वपुः कृशत्वं वदने प्रसन्नतानाद-स्फुटत्वं नयने सुनिर्मले । अरोगता बिन्दु-जयोऽग्नि-दीपनं नाडी-विशुद्धिर्हठ-सिद्धि-लक्षणम् ॥** (HP-2/78), One should be aware that the Nadi have been purified and that success in Hatha Yoga is on the horizon when the body becomes lean, the face glows with joy, Anahatanada manifests, the eyes are clear, the body is healthy, Bindu is under control, and appetite increases (Muktibodhananda, 1998), (David, 2007), (*Swami Digambarji, & Dr M L Gharote. (1997).*, n.d.), (*Chandramouli S. Naikar. (1997).*, n.d.), (*Swami Niranjanananda Saraswati. (2012).*, n.d.),

आसनं प्राणसंरोधः प्रत्याहारश्च धारणा । ध्यानं समाधिरेतानि योगाङ्गानि भवन्ति षट् ।।- 2, **एकं सिद्धासनं प्रोक्तं द्वितीयं कमलासनम् ।।** - 3, **आसनेन रुजं हन्ति प्राणायामेन पातकम्** - 109 - Yogachudamani Upanishad. **यमश्च नियमश्चैव आसनं प्राणसंयमः** - 24, **प्रत्याहारो धारणा च ध्यानं भ्रूमध्यमे हरिम् | समाधिः समतावस्था साष्टाङ्गो योग उच्यते ||** 25, **अहिंसा नियमेष्वेका मुख्या वै चतुरानन | सिद्धं पद्मं तथा सिंहं भद्रं चेति चतुष्टयम् ||** 29 - Yogatatva Upanishad. **हेतुद्वयं हि चित्तस्य वासना च समीरणः । तयोर्विनष्ट एकस्मिंस्तद्भावपि विनश्यतः ||** 1, **तयोरादौ समीरस्य जयं कुर्यान्नरः सदा | मिताहारश्चासनं च शक्तिश्चालस्तृतीयकः ||** 2, Padmasana - **ऊर्वोरुपरि चेद्धत्ते उभे पादतले यथा | पद्मासनं भवेदेतत्सर्वपापप्रणाशनम ||** 5, Vajrasana - **वामाङ्घ्रिमूलकन्दाधो ह्यन्यं तदुपरि क्षिपेत् । समग्रीवशिरःकायो वज्रासनमितीरितम् ||** 6 - Yogakundalini Upanishad. **आसनं प्राणसंरोधः प्रत्याहारश्च धारणा । ध्यानं समाधिरेतानि योगाङ्गानि भवन्ति षट् ||** 41, **आसनानि च तावन्ति यावन्त्यो जीवजातयः ||** 42 - Dhyanabindu Upanishad.

चतुरशीत्यासनानि सन्ति नानाविधानि च । तेभ्यश्चतुष्कमादाय मयोक्तानि ब्रवीम्यहम । सिद्धासनं ततः पद्मासनञ्चोग्रं च स्वस्तिकम ॥ 96 - Shiva Samhita. **बद्धपद्मासनो योगी नमस्कृत्य गुरुं शिवम् | नासाग्रदृष्टिरेकाकी प्राणायामं समभ्यसेत् ||** 106, Benefit - **प्राणायामो भवेदेवं पातकेन्धनपावकः ||, भवोदधिमहासेतुः प्रोच्यते योगिभिः सदा ||** 108, **आसनेन रुजं हन्ति प्राणायामेन पातकम् |** 109- Yogachudamani Upanishad. Only Nadisuddhi & Kevala kumbhaka explain. Nadisuddhi, **प्रातर्मध्यन्दिने सायमर्धरात्रे च कुम्भकान् | शनैरशीतिपर्यन्तं चतुर्वारं समभ्यसेत् ||** 43, **एवं**

मासत्रयाभ्यासान्नाडीशुद्धिस्ततो भवेत् | यदा तु नाडीशुद्धिः स्यात्तदा चिह्नानि बाह्यतः || 44, **जायन्ते योगिनो देहे तानि वक्ष्याम्यशेषतः | शरीरलघुता दीप्तिर्जाठराग्निविवर्धनम् ||** 45 - Yogatatva Upanishad.

स एव द्विविधः प्रोक्तः सहितः केवलस्तथा |यावत्केवलसिद्धिः स्यात्तावत्सहितमभ्यसेत् || 20, **सूर्योज्जायी शीतली च भस्त्री चैव चतुर्थिका | भेदैरेव समं कुम्भो यः स्यात्सहितकुम्भकः ||** 21 - Yogakundalini Upanishad. Only Nadisuddhi Pranayama explain - **यमैश्च नियमैश्चैव आसनैश्च सुसंयतः | नाडीशुद्धिं च कृत्वादौ प्राणायामं समाचरेत् ||** 53 - Trishikhibrahmana Upanishad. Explain Pranava as Pranayama as well as Dhyana, **हंकारेण बहिर्याति सःकारेण विशेत्पुनः । षट्शतानि दिवारात्रौ सहस्राण्येकविंशतिः । अजपां नाम गायत्रीं जीवो जपति सर्वदा ||** 61-63 - Dhyanabindu Upanishad, (*K L Joshi. (2016).*, n.d.), (*Pandit A. Mahadeva Sastri. (1983).*, n.d.)

'Rogastu Dosha vaishamyam, Dosha samyam Arogata' - (Vag/su), This means that roga, or disease, is the result of a dosa imbalance, whereas health is the result of a dosa balance. Tisa imbalance is caused by the following factors: **'Rogamaado Parikshet tatoanantaram Aushadhama' -** (Cha/su), The physician should thoroughly examine the patient before treating him or her. Roga pareeksha includes knowledge of etiology, symptomatology, and pathology. Roga is a disease-related term derived from the root-Run, which means pain or suffering, and is an exclusive property of Atma, i.e., a living organism. Roga and Rogipareeksha are described in our classics**. कालार्थ कर्मणां योगो हीन मिथ्या अतिमात्रकः । सम्यग योगश्च विज्ञेयो रोगारोग्यैक कारणं ॥** (A.S.su), Hina (inadequate, poor), mithya (improper) and ati (excess), yoga association, contact), and Kala (seasons), artha (object of senses), and karma (activates, functions) are the main causes of diseases, whereas their samyak yoga (poor, contact, association) is the cause of health. (KA, 2020),(Srikantha, 1997), (kuma, 1995), (P. V Sharma, 1998), (B, 1994), (K. A. Gupta, 1997), (Kaviraj, 1999), (K. artiste Gupta, 1993), (*Kanjiv Lochan. (2017).*, n.d.), (*Bhagwan Dash, & R.K. Sharma. (2009).*, n.d.), (*V.B. Athavale. (2005).*, n.d.).

Chapter – 05. Material and Methods

5.1. Hypothesis of the Study:

- It was hypothesized, as a result of yoga practices on the varicose vein in the experimental group.
- There was a positive change in the Doppler Ultrasound test in Primary varicose veins subjects.
- **Null Hypothesis:** The yogic practice was not to have any effect on Primary varicose veins.

5.2. Duration and Place of the Study:

This study was conducted for 3 months. Both groups were evaluated at the baseline and the end of 3 months of yoga Therapy. The study was conducted at KSRP 7th Battalion Assaigoli, nearby Mangalore University, Mangalore.

5.3. Study Design:

The study selected two groups and generalized the result after the work. Viz. Experimental group and control group. In the former prescribed, yogic interventions (Yoga Therapy) were given. Fifty-six subjects, aged between 30 – 60yrs, were randomly divided into 2 groups, Experimental (n=28) and Control (n=28) groups. Selecting without the complication of varicose veins for this study the experimental group, out of the subjects were both males and females with good general health conditions.

5.4. Selection of Sample: Subject selection criteria:

The participants all from are KSRP 7th Battalion nearby Mangalore university, Dakshina Kannada District, Karnataka. The subjects selected for the study were who were willing to cure their illness and had responded to free yoga interventions on their campus. Those subjects who have not received any yogic practices in the last 12 months in the Experimental group were selected for the Experimental group.

- **Inclusion Criteria (including age, sex, medication, etc.)**
  - Subjects were aged between 30-60 years of both sexes.
  - Subjects were suffering from Primary varicose veins in the Lower limbs.
  - Subjects were on medication.
- **Exclusion Criteria (including age, sex, medication, etc.)**

- Subjects suffering from any other measurable diseases.
- Subjects had surgery done in the last 6 months.
- Subjects had Pregnancy.
- The subject had any valve complications.
- Those who had Vein Thrombosis had not been taken.
- Those who had Undergo Surgery.

5.5. Diagnostic Methods adopted after the Selection:

Three days before the study was started, a detailed case history was taken. Each subject received a detailed report on their typical diet as well as their routine work. The subject was assessed by the blood pressure, body mass index, height, weight, and Questionnaire, and scanned by doppler ultrasound.

5.6 Ethical Clearance: The study was approved by the Institutes of Human Ethical committee of Mangalore University (IHEC) located in Karnataka.

5.7. Consent: The present study was explained in detail, including its goal, data collection, duration, and use of yoga therapy, all subjects collected written consent by all subjects.

5.8. Case History Recordings:

Case History: Detailed case histories of all the subjects were taken systemically and maintained carefully, the following methods

Section I – Case history includes name, address, age, sex, phone number, and occupation.

Section II – Includes main complaints, history of present illness, and family history.

Section III – Includes personal history like appetite, sleep, micturition, bowel, menstrual cycle, and pregnancy.

Section IV – Includes general examinations like B.P, B.M.I, Height, Weight, Conjunctiva, nails, tongue, and teeth.

5.9. Medical Assessment:

Under the supervision of a medical expert, the subjects were chosen, and their clinical condition was evaluated. Medically, the subjects had varicose veins.

5.11. Parameters of the Study:

- **Body Height and Weight:** The height of the subjects was measured with a precision of 0.1 cm using Gulick Anthropometric tape, model J00305, Lafayette Instrument, U.S.A. Body weight was also measured with a precision of 0.05 kg using an electronic digital weighing machine.
- **Body Mass Index (BMI):** It is calculated by dividing the body weight (kg) by the square of height in meters. BMI= Weight (Kg)/ Height $(m)^2$.
- **Blood Pressure (BP):** It was Measured by a sphygmomanometer and stethoscope.
- **Doppler Test:** Doppler test enables us to find the varicose vein present in the legs. A Doppler ultrasound is a test that uses high-frequency sound waves to measure the amount of blood flow through your arteries and veins, usually those that supply blood to your arms and legs.
- **Questionnaires:** A set of questions regarding the varicose veins or patterns and symptoms of the disorder were given to the subjects before and after the yogic intervention.

5.12. Yogic Intervention of the Study:

A yoga protocol was developed before starting the yoga therapy intervention by taking yoga protocol was created to improve the aim of the subject's quality of life, who were dealing with varicose veins. The yogic practices were carefully and individually instructed throughout the entire session.

Table: Yogic Intervention

Asanas	Breath	Duration	Asanas	Breaths	Duration
Swastikasana	10- Breaths	2-Minutes	Makarasana	05- Breaths	2-Minutes
Vajrasana	05- Breaths	2-Minutes	Bhujangasana	05- Breaths	2-Minutes
Supta-Vajrasan	05- Breaths	2-Minutes	Shalabasana	05- Breaths	2-Minutes
Simhasana	05- Breaths	2-Minutes	Dhanurasana	05- Breaths	2-Minutes
Tadasana-1-2	05- Breaths	2-Minutes	Paryankasana	10- Breaths	2-Minutes
Trikonasana	10- Breaths	2-Minutes	Baddakosnasan	05-Breaths	2-Minutes
Parsvakonasana	10- Breaths	2-Minutes	Upavistkonasa	05- Breaths	2-Minutes
Pachimotasana	05- Breaths	2-Minutes	Jatharaparivartasana	10- Breaths	2-Minutes
Purvottanasana	05- Breaths	2-Minutes	Viparitakrani	15- Breaths	2-Minutes
Janushirsasana	10- Breaths	2-Minutes	Utanapadasana	05- Breaths	2-Minutes
Pavanamuktasana	15- Breaths	3-Minutes			
Pranayama	**Round**	**Duration**	**Pranayama**	**Rounds**	**Duration**
Ujjayi	21	02-Minutes	Bhastrika	10-Rounds	02-Minutes
Anulom-Vilom	21	04-Minutes	Bhramari	05- Rounds	02-Minutes
Relaxation Technique		Shavasana1 and 2			10-Minutes

The sessions began with a brief introduction to the system of yoga therapy. Preliminary preparation for yoga practices. Were instructed to perform of asana in a way that steps (Vinyasa) body movement with synchronized breath (Svasocchvasa), in the final position of each asana (Sthiti), along with direct eyesight (Dristi) there was the duration of 5 breaths, in the same way, pranayama also taught. Asana was 40 minutes. Pranayama followed for the next 10 minutes. Finally, the relaxation technique for 10 minutes. A total of 60 minutes of yoga therapy sessions were taken in the morning from 7 Am to 8 Am. In the first 20 days asana and pranayama are introduced one by one after that all practices are instructed throughout the duration.

5.13. Safety precautions / Biosafety:

Based on the information ascertained during the precautions/biosafety level was assigned to the planned work, appropriate personally selected Yogic interventions, and standard operating procedures. Basic containment – Biosafety Level practices and procedures were the minimum requirement for handling specimens (World Health Organization., 2004).

Chapter – 06. Results and Discussion

6.1. Introduction:

This chapter covers changes in physiological characteristics that were seen in people and helped to make people healthier and disease-free. The Doppler test and the questionnaire were the two primary focus points of the investigation. Reduced varicose vein symptoms and associated issues were caused by abnormalities in these physiological factors. This chapter discusses the findings of the experiments conducted on the parameters indicated above, goes into great depth regarding that finds, and draws significant conclusions**.**

5.2. Results and Discussion:

Table No: 01. Question 1 The table describes the assessment of how many days a varicose vein causes you pain or ache in both your right and left leg. Right leg assessment before the intervention both groups experienced pain caused due to varicose veins between 6 to 10 days (the median score the for two groups is 3). But after the intervention, we observe that the control group participants did not show any change in pain (with a median score remaining of 3), whereas intervention group all the participants were between no pain to less than 5 days the pain (with a mean score of 0). Left leg before the intervention no change among both the group but all is experiencing pain for at least five to 10 days (with a median score of 2.5 for the control and 3 for the intervention group). But after the intervention. No change seen in the control group whereas in the intervention, group all the participants are ranged from no pain to at least 5 days in two weeks (with a median score of 0).

Table No: 01. Question 1

Group			Right Pre-Asses	Right Post Asses	Left Pre-Asses	Left Post Assess
Intervention	Total Observation	N	28	28	28	28
	First Quartile	25	2.25	.00	2.00	.00
	Median	50	3.00	.00	3.00	.00
	Third Quartile	75	3.00	1.00	3.00	1.00
Control	Total Observation	N	28	28	28	28
	First Quartile	25	2.00	2.00	2.00	2.00
	Median	50	3.00	3.00	2.50	2.00
	Third Quartile	75	3.00	3.00	3.00	3.00
			p-value = 0.144	p-value < 0.001	p-value = 0.544	p-value < 0.001
			Not Significant	Significant	Not Significant	Significant

Table No: 02. Question 02, During the last two weeks, how many days did you take painkilling tablets for your varicose veins? there was no difference in the number of days that both the control and intervention groups spent dealing with varicose vein pain before the intervention. The control group continued to experience pain, whereas pain decreased less than 5 days following the intervention, which is a significant difference between the two groups. Question 03: How much ankle swelling have you had in the last two weeks? Before the intervention, both groups (intervention and control) used painkillers for longer than 10 days. Following the intervention, the control group showed no change, while in the intervention group, no individuals were using painkillers (the median score for the control group is 3.5 and intervention group is 0).

Table No: 02. Questions 2 and 3

		Assessment of Painkilling and Ankle swelling in both Legs before and after the study.				
Group			**Q_2 Pre**	**Q_2 Post**	**Q_3 Pre**	**Q_3 Post**
Intervention	Total Observation	N	28	28	28	28
	First Quartile	25	3.00	1.00	1.00	.00
	Median	50	4.00	1.00	2.00	.00
	Third Quartile	75	4.00	1.00	2.00	.00
Control	Total Observation	N	28	28	28	28
	First Quartile	25	3.00	3.00	2.00	1.00
	Median	50	3.50	3.50	2.00	2.00
	Third Quartile	75	4.00	4.00	2.00	2.00
			p-value = 0.424	P<0.001	p-value = 0.241	P<0.001
			Not Significant	Significant	Not Significant	Significant

Table No.: 03. Questions 4 Describe the assessment of worm support stocking. Before the intervention, both the group participants' physicians prescribed the worm support stocking. After the intervention participants from the control group had a physician's suggestion to continue with worm support stocking, whereas no participants used worm support even on their own nor even physicians suggested using the worm support.

Table No: 03. Question 4

		Assessment of worn support stockings or tights on both the Legs				
Group			Right Pre-Asses	Right Post Asses	Left Pre-Asses	Left Post Assess
Intervention	Total Observation	N	27	28	28	28
	First Quartile	25	2.00	.00	2.00	.00
	Median	50	2.00	.00	2.00	.00
	Third Quartile	75	2.00	1.00	2.75	1.00
Control	Total Observation	N	28	28	28	28
	First Quartile	25	2.00	2.00	2.00	2.00
	Median	50	2.00	2.00	2.00	2.00
	Third Quartile	75	2.00	2.00	2.75	2.75
			p-value = 0.823	p-value < 0.001	p-value = 0.723	p-value < 0.001
			Not Significant	Significant	Not Significant	Significant

Table No: 04. Question 5, Assessment of itching in association with varicose vein, before the intervention both the group participants, were experiencing itching below the knee for the legs. But after the intervention, only control group participants have no change in their itching experience whereas intervention group participants experienced either no itching or may have itching above the knee in both legs.

Table No: 04. Questions 5

			Assessment of itching in Association with your Varicose Veins			
Group			Right Pre-Asses	Right Post Asses	Left Pre-Asses	Left Post Assess
Intervention	Total Observation	N	28	28	28	28
	First Quartile	25	2.00	.00	2.00	.00
	Median	50	2.00	.00	2.00	.00
	Third Quartile	75	2.00	1.00	2.00	1.00
Control	Total Observation	N	28	28	28	28
	First Quartile	25	2.00	2.00	2.00	2.00
	Median	50	2.00	2.00	2.00	2.00
	Third Quartile	75	2.00	2.00	2.00	2.00
			p-value = 0.317	p-value < 0.001	p-value = 0.422	p-value < 0.001
			Not Significant	Significant	Not Significant	Significant

Table No: 06. Question 6, concern over the appearance of varicose vein causes, before intervention both the group experienced moderate concern over the appearance of the varicose vein (with a median score in both groups is 2). But after the intervention control group does not have any change over concern (with a median value of 2) whereas, in the intervention group, none of the participants had a concern (with a median score of 0). Question 7. The appearance of varicose veins influences the choice of clothes, before intervention both groups are occasionally experiencing influences on the choice of cloth (with an intervention score of 2 and a control score of 2). But after the intervention, there is no change in the control group (with a median score of 2) whereas the intervention group was experiencing often (with a median score of 1)

Table No: 02. Questions 6 and 7

		The appearance of varicose veins influences your choice of clothing and Cause.				
Group			Q_6 Pre	Q_6 Post	Q_7 Pre	Q_7 Post
Intervention	Total Observation	N	28	28	28	28
	First Quartile	25	1.25	.00	2.00	.00
	Median	50	2.00	.00	2.50	1.00
	Third Quartile	75	2.00	1.00	3.00	1.00
Control	Total Observation	N	28	28	28	28
	First Quartile	25	1.25	1.25	2.00	2.00
	Median	50	2.00	2.00	2.00	2.50
	Third Quartile	75	2.00	2.00	3.00	3.00
			p-value = 1.00	p-value < 0.001	p-value = 0.713	p-value < 0.001
			Not Significant	Significant	Not Significant	Significant

Table No: 03. Question 8, in the last two weeks, have your varicose vein interfered with your work activities? Before the intervention, both experienced a moderate extent of their work (with a median score of 2). But after the intervention control group remained the same whereas, in the intervention group, none of the participants had experienced disturbance (with a median score of 0). Question 9, in the last two weeks your varicose vein interfered with your leisure activities, before the intervention, both the group participants experienced a moderate extent of interference (with a median score of 2) but after the intervention control group does not show any change (with a median score 2) whereas intervention group, most of the participants experienced no interference in the leisure activities (with median score 0).

Table No: 03. Questions 8 and 9

		The appearance of varicose veins influences your choice of work/housework, other daily activities, and leisure activities including sports hobbies, and social life.				
Group			Q_8 Pre	Q_8 Post	Q_9 Pre	Q_9 Post
Intervention	Total Observation	N	28	28	28	28
	First Quartile	25	1.00	.00	1.00	.00
	Median	50	2.00	.00	2.00	.00
	Third Quartile	75	2.00	1.00	2.00	1.00
Control	Total Observation	N	28	28	28	28
	First Quartile	25	1.00	1.00	1.00	1.00
	Median	50	2.00	2.00	2.00	2.00
	Third Quartile	75	2.00	2.00	2.00	2.00
			p-value = 0.571	p-value < 0.001	p-value = 0.413	p-value < 0.001
			Not Significant	Significant	Not Significant	Significant

Table No: 07. The below table represents the mean score comparison of the study parameters among the intervention and control groups before the intervention and the comparison done after the intervention.

- The results reveal that there is a statistically significant difference between mean age among the control and intervention groups.
- The mean systolic blood pressure both pre-interventions, as well as post-intervention, was found to be significantly different among the intervention group and control group.
- Mean diastolic blood pressure before the intervention was found to be non-significant compared to intervention and control groups. After the intervention group, we found that there is a significant mean difference compared to the intervention and control groups.
- Weight and BMI both are non-significance before and after the intervention also.

Table No: 07. SBP, DBP, Height, Weight, and BMI

Pre- Assessment of the study parameters					
	Group	N	Mean	Std. Deviation	Mean Diff./Sign.
Age	Intervention	28	52.07	4.073	16.179 p-value<0.001*
	Control	28	35.89	4.787	
SBP	Intervention	28	132.43	7.838	6.214 p-value = .013*
	Control	28	126.21	10.057	
DBP	Intervention	28	83.86	8.017	2.429 p-value = 0.357
	Control	28	81.43	11.286	
Weight	Intervention	28	78.079	20.1541	6.0036 p-value = 0.216
	Control	28	72.075	15.4126	
BMI	Intervention	28	27.279	10.0084	2.8357 p-value = 0.152
	Control	28	24.443	2.5591	
Post-Assessment of the study parameters					
SBP	Intervention	28	123.07	4.505	-4.571 p-value = 0.025*
	Control	28	127.64	9.507	
DBP	Intervention	28	78.79	4.013	-3.929 p-value = 0.040*
	Control	28	82.71	9.014	
Weight	Intervention	28	72.625	6.4444	-3.2321 p-value = 0.105
	Control	28	75.857	8.1136	
BMI	Intervention	28	31.282	37.8123	5.8357 p-value = 0.419
	Control	28	25.446	2.2676	

Note: * represent to p-value indicating g significant mean difference at a 5% level of significance

Table No: 08. Assessment of some activity's intervention group.

- Regarding work, compared with before there is no change in work after the intervention. The median score for before and after remains the same (the median score for the group is 2).
- Study assessment, no change from pre to post.
- Housework, no change from pre to post.
- Walking, no change from pre to post.
- Sports, there is a change in pre to post. The median score before the intervention was 2 and after the intervention, it was reduced to 1.
- No change in hobbies from pre to post.
- No change in social life from pre to post.

Table No: 08

Assessment of Activity in Intervention Group						
			Percentiles			
		N	25th	50th (Median)	75 th	
Intervention	Pre-Score for Work	28	3.00	3.00	4.	p-value = 0.001
	Post Score for Work	28	3.00	3.00	3.	
	Pre-Score for Study	28	1.00	1.50	2.	p-value = 1.000
	Post Score for Study	28	1.00	1.50	2.	
	Pre-Score for Housework	28	1.00	1.00	2.	p-value = 0.100
	Post Score for	28	1.00	1.00	1.	
	Pre-Score for Walking	28	2.00	2.00	3.	p-value = 0.002
	Post Score for Walking	28	2.00	2.00	2.	
	Pre-Score for Sports	28	1.00	2.00	2.	p-value = 0.003
	Post Score for Sports	28	2.00	1.00	2.	
	Pre-Score for Hobbies	28	1.00	1.00	2.	p-value = 0.405
	Post Score for Hobbies	28	1.00	1.50	2.	
	Pre-Score for Social life	28	1.00	2.00	2.	p-value = 0.109
	Post Score for Social life	28	2.00	2.00	2.	

Table No: 09. Assessment of some activities in the control group.

- No change in work from pre- to post-intervention.
- Study assessment, no change from pre to post.
- Housework, no change from pre to post.
- Walking, no change from pre to post.
- Sports, no change in the condition from pre- to post-intervention
- No change in hobbies from pre to post.
- No change in social life from pre to post.

Table No.: 09.

Assessment of Activities in the Control Group						
			Percentiles			
		N	25th	50th (Median)	75th	
Control	Pre-Score for Work	28	3.00	3.00	4.00	p-value = 1.000
	Post Score for Work	28	3.00	3.00	4.00	
	Pre-Score for Study	28	1.00	1.50	2.00	p-value = 1.000
	Post Score for Study	28	1.00	1.50	2.00	
	Pre-Score for Housework	28	1.00	1.00	2.00	p-value = 1.000
	Post Score for Housework	28	1.00	1.00	2.00	
	Pre-Score for Walking	28	2.00	2.00	3.00	p-value = 1.000
	Post Score for Walking	28	2.00	2.00	3.00	
	Pre-Score for Sports	28	1.00	2.00	2.00	p-value = 1.000
	Post Score for Sports	28	1.00	2.00	2.00	
	Pre-Score for Hobbies	28	1.00	1.00	2.00	p-value = 1.000
	Post Score for Hobbies	28	1.00	1.00	2.00	
	Pre-Score for Social life	28	1.00	2.00	2.00	p-value = 1.000
	Post Score for Social life	28	1.00	2.00	2.00	

Table No: 10. The table represents the patient symptoms on a rating scale from one to five and compared pre- to post-intervention changes in the intervention group. One represents mild, two represents chronic, three represent moderate, four represent severely, and five represent very severe (not tolerable).

- For the itching assessment, the median score of pre-intervention was 2 (IQR 2-3) and for post-intervention, it was reduced to 1.50 (IQR 1 to 2) which was a significant difference.
- For assessment of discoloration, the median score for pre-intervention was 2 (IQR 1-3) after the intervention it was reduced to 1.50 (IQR 1-3) but still, the test conforms to a significant reduction.

- For Skin rashes, the pre-median score was 2 (IQR 1-2), and the post-median score was 1.50 (IQR 1-2) test confirming the significant reduction in skin rashes.
- There is a significant reduction is seen in anxiety compared to pre- to post- intervention.
- Swelling, the pre-median score was 3 (IQR 2-3) but after the intervention, it was reduced to 1.50 (IQR 1-2) suggesting a significant reduction.
- Aching also found a significant difference in a median score that pre score 3 (IQR 2-3) and the post was 1.50 (IQR 1-5).
- For night cramps also test confirms that they are a significant reduction in the median score from pre median score of 3 (IQR 3-3) to a post-score1.50 (IQR 1-2).
- Regarding pain, there is no change observed from pre- to post-intervention.

Table No: 10. Patient Symptoms

Patient Symptoms						
			Percentiles			
		N	25th	50th (Median)	75th	
Intervention	Pre-Score for Itching	28	2.00	2.00	3.00	p-value = 0.001 (Significant)
	Post Score for Itching	28	1.00	1.50	2.00	
	Pre-Score for S. Discoloration	28	1.00	2.00	2.75	p-value = 0.000 (Significant)
	Post Score for S. Discoloration	28	1.00	1.50	2.00	
	Pre-Score for Skin Rash	28	1.00	2.00	2.00	p-value = 0.048 (Significant)
	Post Score for Skin Rash	28	1.00	1.50	2.00	
	Pre-Score for Phlebitis	28	2.00	2.00	2.00	p-value = 0.000 (Significant)
	Post Score for Phlebitis	28	1.00	1.50	2.00	
	Pre-Score for Anxiety	28	1.00	1.00	2.00	p-value = 0.285 (Not Significant)
	Post Score for Anxiety	28	1.00	1.50	2.00	
	Pre-Score for Swelling	28	2.00	3.00	3.00	p-value = 0.000 (Significant)
	Post Score for Swelling	28	1.00	1.50	2.00	
	Pre-Score for Aching	28	2.00	3.00	3.00	p-value = 0.013 (Significant)
	Post Score for Aching	28	1.00	1.50	2.00	
	Pre-Score for Night	28	3.00	3.00	3.00	p-value = 0.001 (Significant)
	Post Score for Night	28	1.00	1.50	2.00	
	Pre-Score for Pain	28	2.00	2.00	2.00	p-value = 0.808 (Not Significant)
	Post Score for Pain	28	1.00	1.50	2.00	

Table No: 11. The table represents the patient symptoms on a rating scale from one to five and compared pre- to post-intervention changes in the control group. The range of scale remains the same.

- No change in Itching score from pre-intervention to post-intervention.

- No change in discoloration compared to pre- to post-intervention.
- For Skin rashes, the test reveals that there is no significant change.
- For anxiety, there is no change is observed in the median score from pre- to post intervention.
- Swelling, there is no change observed.
- Aching also has no change.
- For night cramps remains unchanged from pre- to post-intervention.
- Regarding pain, there is no change observed from pre- to post-intervention.

Table No: 11.

Patient Symptoms						
			Percentiles			
		N	25th	50th (Median)	75th	
Control	Pre-Score for Itching	28	1.00	2.00	3.00	p-value = 1.000 (Not Significant)
	Post Score for Itching	28	1.00	2.00	3.00	
	Pre-Score for Skin Discoloration	28	1.00	2.00	2.75	p-value = 1.000 (Not Significant)
	Post Score for Skin Discoloration	28	1.00	2.00	2.75	
	Pre-Score for Skin Rash	28	1.00	2.00	2.00	p-value = 1.000 (Not Significant)
	Post Score for Skin Rash	28	1.00	2.00	2.00	
	Pre-Score for Phlebitis	28	1.00	2.00	2.00	p-value = 1.000 (Not Significant)
	Post Score for Phlebitis	28	1.00	2.00	2.00	
	Pre-Score for Anxiety	28	1.00	1.00	2.00	p-value = 1.000 (Not Significant)
	Post Score for Anxiety	28	1.00	1.00	2.00	
	Pre-Score for Swelling	28	2.00	3.00	3.00	p-value = 1.000 (Not Significant)
	Post Score for Swelling	28	2.00	3.00	3.00	
	Pre-Score for Aching	28	2.00	3.00	3.00	p-value = 1.000 (Not Significant)
	Post Score for Aching	28	2.00	3.00	3.00	
	Pre-Score for Night Cramps	28	3.00	3.00	3.00	p-value = 1.000 (Not Significant)
	Post Score for Night Cramps	28	3.00	3.00	3.00	
	Pre-Score for Pain	28	2.00	2.00	2.00	p-value = 1.000 (Not Significant)
	Post Score for Pain	28	2.00	2.00	2.00	

Table No: 12. Doppler Study of The Right and Left Lower Limb (Venous System)

VESSELS/ VEINS	LUMEN	COMPRESSIBILITY	RESTING FLOW	DISTAL AUGMENTATION	VALSALVA
POPLITEAL	NORMAL	NORMAL	NORMAL	PRESENT	NO REFLUX
COMMON FEMORAL	NORMAL	NORMAL	NORMAL	PRESENT	NO REFLUX
SUPERFICIAL FEMORAL	NORMAL	NORMAL	NORMAL	PRESENT	NO REFLUX

Saphenous popliteal junction – Competent.

No evidence of deep vein thrombosis in the lower leg below the knee

Perforators: NORMAL.

Lateral aspect: NORMAL.

IMPRESSION: COMPETENT.

Table No: 13. Pre and Post Assessment of the study parameter

		Assessment of Varicose Veins By doppler Scanning on both the Legs				
Group			Right Pre-Asses	Right Post Asses	Left Pre-Asses	Left Post Assess
Intervention	Total Observation	N	28	28	28	28
	First Quartile	25	2.25	.00	2.00	.00
	Median	50	3.00	.00	3.00	.00
	Third Quartile	75	3.00	1.00	3.00	1.00
Control	Total Observation	N	28	28	28	28
	First Quartile	25	2.00	2.00	2.00	2.00
	Median	50	3.00	3.00	2.50	2.00
	Third Quartile	75	3.00	3.00	3.00	3.00
			p-value = 0.144	p-value < 0.001	p-value = 0.544	p-value < 0.001
			Not Significant	Significant	Not Significant	Significant

6.7. Important observations were seen in the treated subjects after the study:

The subjects were presumed active because their blood pressure, BMI, and weight had all decreased. Their comments indicated that they felt a distinct sense of lightness in the bloodstream. They admitted that they were looking forward to doing physical work. There was no discernible difference in mean values between the control sample and those observed elsewhere. In terms of physical appearance, the subject had improved since the study, with the veinous symptoms test reason showing significant improvement.

These symptoms were indicative of varicose veins, and leg access illness was thought to have improved them. The control group didn't exhibit any appreciable progress. After the study, subjects who had previously felt their breathing was insufficiently reported being satisfied with their breathing because they were able to perform physical labor for longer periods and because their valve capacity had increased.

Chapter – 07. Summary, and Conclusion.

7.1. Summary:

After 90 days of yoga therapy, the participants in the experimental group significantly improved their varicose veins. All the individuals in the experimental group saw a reduction or relief from varicose vein symptoms. The control group, however, showed no signs of these modifications. In the experimental group, several patients initially found it challenging to engage in some of the routines for a few days, but following consistent practice, all of them were able to do so freely and saw significant benefits. Subjects said they felt lighter and more energized after doing yoga. Patients experienced symptomatic improvement from varicose veins after a few days of yoga therapy.

The study was conducted at KSRP 7th Battalion Assaigoli, nearby Mangalore University, Mangalore – 574199, between 2019 to 2023, to determine the impact of yoga therapy on varicose veins in the lower limbs. 56 cases of varicose veins in lower limbs were presented and analyzed in the study. It is found that the most common varicose veins symptoms and signs leading to medical treatment, The incidence were males in the study, and the reason few females were in the study. Patients presented with dilated veins more commonly presented symptoms with or without pain.

The operative line of treatment is a primary procedure in the management of varicose veins of the lower limb. Stripping of LSV and non-stripping of SSV are associated with less morbidity. An accurate assessment of the underlying anatomy reduces the symptoms and risks of recurrent varicose veins. There was a recurrence in our study. There is a need for yoga therapy for those who have this problem to afford the newer modality of treatment of varicose veins.

7.2. Conclusion:

Based on a review of the data gathered, the current study may conclude that the effect of yoga therapy on varicose veins can be assessed using a questionnaire and Doppler ultrasound scanning. The study supports the use of a questionnaire and Doppler ultrasound scanning to evaluate the effectiveness of yoga therapy. This demonstrates that yoga can be a more successful therapeutic approach for varicose veins. Yoga has the power to fully recover patients from their illnesses. Like how every patient usually feels following yoga therapy, there is an instantaneous improvement, relief, and sensation of restored vigor. However, there are few

metrics available to demonstrate the degree of immediate improvement brought about by yoga treatment. In the instance of varicose veins, this research demonstrates that Doppler ultrasound scanning can be used as a measure to evaluate the effectiveness of yoga therapy.

For a better understanding of the findings, more subjects may be added to future research. All the participants in this study were outpatients, and it is possible to achieve superior results by incorporating the science of yoga holistically into an inpatient setting where one can regulate the diet and way of life that is a component of yoga. In other diseases where there is inflammation, the development of pain, and other ailments which occur from the cellular level owing to metabolic changes, the effectiveness of yoga therapy may be examined by employing Doppler ultrasound scanning.

1.2. Limitations of the study:

- This study is limited to yoga therapy in the coastal regions of Karnataka.
- The method developed in this study is limited to a primary varicose vein in lower limbs.
- This study couldn't assess the changes in the blood because this study was based on a non-invasive method.

1.3. Suggestions for future Study:

- Study can also do with ayurvedic herbs, juices, and nutritional diet.
- Study can also do Secondary stage varicose veins.

Bibliography

S., & KA, S. N. (2020). A clinical study to understand Rogastu Dosha Vaishamyam w.s.r. to Yauvana Pidaka. *Journal of Ayurveda and Integrated Medical Sciences (JAIMS)*, *5*(02). https://doi.org/10.21760/jaims.5.2.1

Abu-Elcibaa Osman, O., Abd El-Hamed El-Heeny, A., Mohamed Abd El-Razeq, M., & Abd El-Hameed El-Heeny, A. (2019). Management of primary uncomplicated varicose veins, endovenous laser ablation with sclerotherapy versus traditional surgery: which is the best option? *Egyptian J Surgery*, *38*, 319–327. https://doi.org/10.4103/ejs.ejs_208_18

Asbeutah, A. M., Al-Azemi, M., Al-Sarhan, S., Almajran, A., & Asfar, S. K. (2015). Changes in the diameter and valve closure time of leg veins in primigravida women during pregnancy. *Journal of Vascular Surgery: Venous and Lymphatic Disorders*, *3*(2), 147–153. https://doi.org/10.1016/j.jvsv.2014.09.005

Balayogi Bhavanani Sri Balaji Vidyapeeth, A., Yogacharya, B., & Balayogi Bhavanani, A. (2007). *PRINCIPLES AND METHODS OF YOGA THERAPY (Compilation) Effect of Different Pranayamas on Respiratory Sinus Arrhythmia View project History of Yoga in Modern Times View project PRINCIPLES AND METHODS OF YOGA THERAPY STUDY MATERIALS COMPILED AND EDITED Dr ANANDA BALAYOGI BHAVANANI*. www.rishiculture.orgwww.icyer.com

Black, C. M. (2014). Anatomy and Physiology of the Lower-Extremity Deep and Superficial Veins. *Techniques in Vascular and Interventional Radiology*, *17*(2), 68–73. https://doi.org/10.1053/j.tvir.2014.02.002

Brake, M., Lim, C. S., Shepherd, A. C., Shalhoub, J., & Davies, A. H. (2013a). Pathogenesis and etiology of recurrent varicose veins. In *Journal of Vascular Surgery* (Vol. 57, Issue 3, pp. 860–868). Mosby Inc. https://doi.org/10.1016/j.jvs.2012.10.102

Bramhanwade, H., Jena, S., Bahute, P., Bhatted, S., & Dharmarajan, P. (2021). Management of varicose veins through therapeutic purgation and bloodletting therapy: a case study. *Journal of Indian System of Medicine*, *9*(1), 52. https://doi.org/10.4103/jism.jism_110_20

Chandramouli S. Naikar. (1997). (n.d.).

Chauhan, S., & Patra, S. (2021). Yoga and its adjuvant therapies for the management of varicose vein disease: A narrative review. *Yoga Mimamsa*, *53*(2), 134. https://doi.org/10.4103/ym.ym_108_21

Diagnosis and treatment of varicose veins in the legs KCE reports 164C. (n.d.). http://www.kce.fgov.be

Forlee, M. V., Grouden, M., Moore, D. J., & Shanik, G. (2006). Stroke after varicose vein foam injection sclerotherapy. *Journal of Vascular Surgery*, *43*(1), 162–164. https://doi.org/10.1016/j.jvs.2005.09.032

Gauw, S. A., Lawson, J. A., Van Vlijmen-Van Keulen, C. J., Pronk, P., Gaastra, M. T. W., & Mooij, M. C. (2016). Five-year follow-up of a randomized, controlled trial comparing saphenofemoral ligation and stripping of the great saphenous vein with endovenous laser ablation (980 nm) using local tumescent anesthesia. *Journal of Vascular Surgery*, *63*(2), 420–428. https://doi.org/10.1016/j.jvs.2015.08.084

Goulart, V. B., Cabral, A. C. V., Reis, Z. S., Navarro, T. P., Alves, S. L., De Miranda, P. R. T., Sarquis, A. L., & De Lima Rezende, C. A. (2013). Anatomical and physiological changes in the venous system of lower limbs in pregnant women and findings associated with the symptomatology. *Archives of Gynecology and Obstetrics*, *288*(1), 73–78. https://doi.org/10.1007/s00404-013-2728-9

Guo, X., Cui, H., & Wen, X. (2019). Review Article Treatment of varicose veins of the lower extremity: a literature review. In *Int J Clin Exp Med* (Vol. 12, Issue 3). www.ijcem.com/

Gupta, K. A. (1997). *Astangahrdayam of Vagbhata*. Chaukhambha Sanskrit Sansthan.

Gupta, K. artide. (1993). *Vagbjhatas astanga Samgraha*. Krishnadas Academy.

Hague, A., Pherwani, A., & Rajagopalan, S. (2017). Role of compression therapy in the pathophysiology of the venous system in lower limbs. In *Surgeon* (Vol. 15, Issue 1, pp. 40–46). Elsevier Ltd. https://doi.org/10.1016/j.surge.2016.08.004

Kandasamy Palanisamy, J., Ponnu, S., Mani, S., & Balakrishnan, S. (2018). A CRITICAL REVIEW ON TRADITIONAL HERBAL DRUGS: AN EMERGING ALTERNATIVE DRUG FOR VARICOSE VEINS. *Palanisamy et al. World Journal of Pharmaceutical Research*, *7*, 316. https://doi.org/10.20959/wjpr20185-11141

Kodi, M., & Sangita, A. (n.d.). *Prevention of Varicose Veins*. https://www.researchgate.net/publication/327907344

Kryle, L., Arnoldi, C., & Kupperman, H. S. (n.d.). *THE THERAPEUTIC EFFECTIVENESS OF TRYPSIN IN THE TREATMENT OF THROMBOPHLEBITIS*.

Lurie, F., Passman, M., Meisner, M., Dalsing, M., Masuda, E., Welch, H., Bush, R. L., Blebea, J., Carpentier, P. H., De Maeseneer, M., Gasparis, A., Labropoulos, N., Marston, W. A., Rafetto, J., Santiago, F., Shortell, C., Uhl, J. F., Urbanek, T., van Rij, A., … Wakefield, T. (2020). The 2020 update of the CEAP classification system and reporting standards. *Journal of Vascular Surgery: Venous and Lymphatic Disorders*, *8*(3), 342–352. https://doi.org/10.1016/j.jvsv.2019.12.075

Mahajan, Dr. R. (2021). Preventing Varicose Veins: Role of Exercise, Diet and Physiotherapy. *International Journal of Medical Science and Health Research*, *05*(05). https://doi.org/10.51505/ijmshr.2021.5511

Malvika, S., Tarun, S., & Manjula, Y. (2015). Int J Ayu Pharm Chem Ayurveda: A Fruitful Remedy for Varicose Veins. *Greentree Group © IJAPC Int J Ayu Pharm Chem*, *4*. www.ijapc.com

Manerikar, K., Patil, C., Bhatia, S., Singh, G., & Gawade, H. (2018). A study of etiology of secondary varicose veins. *Archives of Clinical and Experimental Surgery (ACES)*, 1. https://doi.org/10.5455/aces.20171001101706

Meissner, M. H., Gloviczki, P., Bergan, J., Kistner, R. L., Morrison, N., Pannier, F., Pappas, P. J., Rabe, E., Raju, S., & Villavicencio, J. L. (2007). Primary chronic venous disorders. *Journal of Vascular Surgery*, *46*(6 SUPPL.). https://doi.org/10.1016/j.jvs.2007.08.038

Mishra, S. P. (2011). *Yoga and ayurveda: (their alliedness and scope as positive health sciences) /*. Chaukhambha Sanskrith Sansthan ,.

MS, D. J. R. N. (2017). Clinical Study and Management of Varicose Veins. *Journal of Medical Science And Clinical Research*, *05*(01), 15473–15480. https://doi.org/10.18535/jmscr/v5i1.46

Muktibodhananda. (1998). *Hatha yoga pradipika:Light on Hatha yoga*. Bihar school of yoga.

Mwipatayi, B. P., Western, C. E., Wong, J., & Angel, D. (2016). Atypical leg ulcers after sclerotherapy for treatment of varicose veins: Case reports and literature review. *International Journal of Surgery Case Reports*, *25*, 161–164. https://doi.org/10.1016/j.ijscr.2016.06.024

Myers, K. A., Jolley, D., Clough, A., & Kirwan, J. (2007). The outcome of Ultrasound-guided Sclerotherapy for Varicose Veins: Medium-term Results Assessed by Ultrasound Surveillance. *European Journal of Vascular and Endovascular Surgery*, *33*(1), 116–121. https://doi.org/10.1016/j.ejvs.2006.09.005

Naragatti, S. (2019). CASE STUDY ON PATIENT WITH VARICOSE VEINS Role of Yoga Therapy and Hydrotherapy for management of autism spectrum disorder: a narrative review View project Siddappa Naragatti CENTRAL COUNCIL FOR RESEARCH IN YOGA AND NATUROPATHY CASE STUDY ON PATIENT WITH VARICOSE VEINS A R T I C L E I N F O. *Article in International Journal of Current Advanced Research*. https://doi.org/10.24327/ijcar.2019.20200.3938

O'Flynn, N., Vaughan, M., & Kelley, K. (2014). Diagnosis and management of varicose veins in the legs: NICE guideline. *British Journal of General Practice*, *64*(623), 314–315. https://doi.org/10.3399/bjgp14X680329

Oglat, A. A., Matjafri, M. Z., Suardi, N., Oqlat, M. A., Abdelrahman, M. A., & Oqlat, A. A. (2018). A review of medical doppler ultrasonography of blood flow in general and especially in the common carotid artery. *Journal of Medical Ultrasound*, *26*(1), 3–13. https://doi.org/10.4103/JMU.JMU_11_17

Pearson, N., & Taylor, M. J. (n.d.). *Yoga Therapy and Pain How Yoga Therapy Serves in Comprehensive Integrative Pain Management, and How It Can Do More Yoga Therapy and Pain-How Yoga Therapy Serves in Comprehensive Integrative Pain Management, and How It Can Do More*. https://doi.org/10.17761/2020-D-19

Saraswati, S. S. (n.d.). *Four Chapters on Freedom Commentary on the Yoga Sutras of Patanjali*.

Sengupta, P. (2012). Health Impacts of Yoga and Pranayama: A State-of-the-Art Review. In *International Journal of Preventive Medicine* (Vol. 3, Issue 7). www.ijpm.in

Sharma, S., Vashist, M., Gopal Vashist, M., Grow, K., & Yadav, R. (n.d.). Certain Professions of Working as Risk Factors for Varicose Veins 1. In *IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS* (Vol. 7, Issue 5). www.iosrjournals.org

Sharma, T. (n.d.). *Int J Ayu Pharm Chem Ayurveda: A Fruitful Remedy for Varicose Veins*. https://www.researchgate.net/publication/350940657

Srivastava, P., & Mangal, G. (2019). International Journal of Ayurveda and Traditional Medicine Outcome of Jalaukavacharan (Medicinal leech therapy) in varicose vein-A Case Report. In *CASE REPORT IJATM* (Vol. 1, Issue 1). https://ijatm.org/

Swamy, A. (1970). *Patanjala-yogadarshana:Vyasabhashya sahita*. Sri Ramakrishnashrama.

Veṅkaṭareḍḍi, M. (2005). *Yogic therapy, [its basic principles, practices, methods and case studies]*. Sri M.S.R. Memorial Yoga Series.

Swami Vivekananda. (1982). Raja Yoga. Calcutta: Advaita Ashrama Delhi Entally Road Culcatta 700014.

Hariharananda Aranya. (2014). Yoga Philosophy of Patanjali with Bhasvati (4 ed.). Culcutta: Calcutta University Press, Culcutta 700014.

I.K. Taimni. (1972). The Science of Yoga. Wheaton, IL: Quest Books, U.S306 W. Geneva Road Wheaton, IL 60187.

Oman and Maharaj. (2013). Patanjal Yoga Pradeep(2013 ed.). Gorakhpur: Geeta Press Gorakhpur 273005.

Ramaprasada. (2000). Patanjali's Yoga Sutras. Delhi: Munshiram Manoharlal Publishers Pvt. Ltd, New Delhi, Delhi 110055.

Swami Adidevananda. (2014). ಪಾತಂಜಲಯೋಗದರ್ಶನ: Patanjala Yoga Darshana (Kannada). Mysore: Shri Ramakrishna Ashram Mysore 570020.

Swami Prabhavananda. (2008). Patanjali Yoga Sutras. Chennai: Sri Ramakrishna Math Chennai, Chennai, Tamil Nadu 600028.

Swami Satyananda Saraswati. (2016). Four Chapters on Freedom: Commentary On The Yoga Sutras of Sage Patanjali. Munger: Yoga Publications Trust, Munger, Bihar 811201, India.

Swami Vivekananda. (2017). Raja Yoga. Delhi: Bharatiya Kala Prakashan, Delhi, 110035.

Chandramouli S. Naikar. (1997). Ghatayoga. Delhi: Medha Publisher, Naveen Shahdara, Delhi110032.

Radhakrishnan, P. (1995). The Bhagavadgita. New York: Aquarian New York, New York, United States10017 U.S.A.

TKV. Desikacharya. (1998). Nathamuni's Yoga Rahasya. Chennai: Krishnamacharya Yoga Mandiram, Chennai, Tamil Nadu 600028.

Swami Niranjanananda Saraswati. (2012). Gheranda Samhita (1 ed.).Munger: Bihar School of Yoga Munger, Bihar 811201.

Swami Digambarji, & Dr M L Gharote. (1997). Gheranda Samhita. Lonavala: Kaivalyadhama Lonavla, Maharashtra 410403.

B.K.S. Iyengar. (2005). Light on Pranayama. Rockport MA: Element Rockport MA P. O. BOX 830 21 BROADWAY; ROCKPORT, 01966; MA; USA.

B.K.S. Iyengar. (2006). Light on Yoga: The Classic Guide to Yoga by the World's Foremost Authority (6 ed.). London: Thorsons London Bridge Street, London, 32 London Bridge St, London SE1 9SG, United Kingdom.

Dhirendra Brahmachari. (1970). Yogasana Vijnana. Mumbai: Asia Publishing House Mumbai City MH 400038 IN.

Krishna Bhat, K. (2006). The Power of Yoga (1 ed.). Mangalore: Suyoga Publication574279 Mangalore.

Pattabhi Jois. (2010). Yoga Mala (2 ed.). Delhi: Picador New Delhi, Delhi 110001 India.

Shri O P Tiwari. (2005). Asana Why and How. Lonavala: Kaivalyadhama Lonavla, Maharashtra 410403.

Swami Gitananda Giri. (2007). Mudras. (Dr. Ananda Balayogi Bhavanani, Ed.) Pondichery: Meenakshi Devi Bhavanani, Satya Press, Pondichery605013.

Swami Kuvalayananda, & Dr S L Vinekar. (1963). Yogic Therapy It's Basic Principles and Methods. Delhi: Central Hea Government of India, Near Udyog Bhawan Metro Station, Maulana Azad Rd, New Delhi, Delhi 110011.

Swami Satyananda Saraswati. (2004). A Systematic Course in the Ancient Tantric Techniques of Yoga and Kriya (3 ed.).Munger: Yoga Publications Trust, Munger, Bihar, India.

Swami Satyananda Saraswati. (2013). Asana Pranayama Mudra Bandha. Munger: Bihar School of Yoga Bihar 811201.

Tirumalai Krishnamacharya. (1972). Yogasanagalu (3 ed.).Mysore: Prasaranga Mysore University Karnataka 570009.

A.K. Jain. (2017). Human Physiology and Biochemistry for Physical Therapy and Occupational Therapy (3 ed.).Delhi: Arya Publications Delhi - 110065.

H.R. Nagendra. (2004). Yoga Its Basis and Applications. Bangalore: Swami Vivekananda Yoga Prakashana19, Bagappa Rd, Gavipuram Extention, Kempegowda Nagar, Bengaluru, Karnataka 560019.

K L Joshi. (2016). 112 Upanisad [Vol.1-2].Delhi: Chaukambha Sanskrit Pratishthan, New Delhi, Delhi 110002.

Leslie Kamin off, & Amy Matthews. (2011). Yoga Anatomy (2 ed.). Champaign: Human Kinetics Publishers, Champaign, IL61820, United States.

M. M. Gore. (2017). Anatomy and Physiology of Yogic Practices: Understanding of the Yogic concepts and physiological mechanism of the yogic practices (6 ed.). New Delhi: New Age Books, Darya Ganj, New Delhi-110 002.

Pandit A. Mahadeva Sastri. (1983). Yoga Upanishads. Chennai: The Adyar Library and Research Centre, Chennai, Tamil Nadu 600090.

Sadasiva Brahmendra Saraswathi. (1978). Shiva Yoga Deepika. Pondichery: Anand Ashram Series, Mettu Street, 605104, Chinna Mudaliyar Chavady Pondichery.

A.G. Mohan. (2004). Yoga Therapy: A Guide to the Therapeutic Use of Yoga and Ayurveda for Health and Fitness. Boston: Shambhala, Boston, Massachusetts, United States, Brookline, MA 02445, United States.

Bhagwan Dash, & R.K. Sharma. (2009). Caraka Samhita: Text with English Translation & Critical Exposition Based on Cakrapani Datta's Ayurveda Dipika (7 Volume Set).Varanasi: Chowkhamba Sanskrit Series, Varanasi, Uttar Pradesh 221001.

Kanjiv Lochan. (2017). Astanga Hridaya of Vagbhata Vol. I - III. New Delhi: Chaukhambha Publications, New Delhi, Delhi 110002.

G. D Wasley. (1973). Clinical laboratory techniques. Balkema: Baillière Tindall, Balkema, A.A. P.O. Box 1675.

Michael Glynn, & William M Drake. (2012). Hutchison's Clinical Methods: An Integrated Approach to Clinical Practice with STUDENT CONSULT (23 ed.). Nottingham: Saunders Ltd, Nottingham NG5 7JD, United Kingdom.

V.B. Athavale. (2005). Basic Principles of Ayurveda. New Delhi: Chaukhamba Sanskrit Pratishthan Oriental Publishers & Distributors, New Delhi, Delhi 110002.

Rahul Tanwani. (2016). The Skills of History Taking (2 ed.). New Delhi: Jaypee Brothers Medical Publishers, Delhi,110002 India.

Kothari, C. R. (2004). Research Methodology: Methods & Techniques. Bengaluru: New Age International (P) Ltd, Bengaluru, Karnataka 560026.

Whiteley, M. S. (2022). Current Best Practice in the Management of Varicose Veins. In *Clinical, Cosmetic and Investigational Dermatology* (Vol. 15, pp. 567–583). Dove Medical Press Ltd. https://doi.org/10.2147/CCID.S294990

Woodyard, C. (2011). Exploring the therapeutic effects of yoga and its ability to increase the quality of life. *International Journal of Yoga*, *4*(2), 49. https://doi.org/10.4103/0973-6131.85485

World Health Organization. (2004). *Laboratory biosafety manual.* World Health Organization.

Yogi, C. (2004). *Breathing Life : Pranayama yoga techniques*. Embassy books.

Youn, Y. J., & Lee, J. (2019). Chronic venous insufficiency and varicose veins of the lower extremities. In *Korean Journal of Internal Medicine* (Vol. 34, Issue 2, pp. 269–283). Korean Association of Internal Medicine. https://doi.org/10.3904/kjim.2018.230.

Research Paper Presented in the National and International Seminars / Workshops / Conferences / E - Poster and Webinars:

1. Rajashekhar Zulpe (2021): “A Critical Review on Siraj Granthi in Classical Text”. 16th Kannada Vijnana Sammelana (Karnataka Science Congress) held at Mangalore University, Mangalagangotri Campus for three days from September 15th to 17th 2021.
2. Rajashekhar Zulpe (2022): “Prevention of Varicose Vein Through Therapeutic Yoga and Ayurveda – A Systematic Review”. Organized by the Department of Human Consciousness and Yogic Sciences and Dharmanidhi Yogapeetha, Mangalore University, held at Mangalagamgothri – 574199 in Collaboration with UGC and IUC (Inter-University Center for Yogic Science, Bengaluru) Celebration of International Day of Yoga 2022 “National Seminar on Yoga” From June 9th to 10th June 2022.
3. Rajashekhar Zulpe (2022): “Effect of Yoga Therapy on Varicose Veins-A Research Study”. One Day National Seminar on Social Restructuring Through Yoga, Sponsored by Indian Council of Philosophical Research (ICPR, New Delhi) organized by Himalayan School of Yoga Sciences Swami Rama Himalayan University, Dehradun, Uttarakhand. On 20th July 2022.
4. Rajashekhar Zulpe (2022): “Therapeutic Effect of Yogic Practices on Varicose Veins - A Research Study”. One Day National Seminar on Yogic Science “Yoga for Humanity,” Organized by Kalyan Karnataka Human Resource, Agriculture, and Cultural Society, Kalaburagi. In Collaboration with: Vivek Jagruth Yoga Vidhya Peeth, P.G Diploma in Yoga College, Ganesh Nagar, Kalaburagi. On 24th July 2022.
5. Rajashekhar Zulpe (2022): - E-Poster Designing Competition, Organized by the Sri Devaraj URS Academy of Higher Education & Research, Kolar (Karnataka) on the occasion of International Day of Yoga 2022. Organized by the International Science Community Association.
6. Rajashekhar Zulpe (2022): “Therapeutic Effect of Yoga Therapy on Varicose Vein - A Research Study”. Organized by the 9th International Virtual Congress (IVC-2022) held at www.isca.net.co during August 5-10, 2022.

Research Paper Published in International / National journal.

1. Zulpe, R., & Sharma, K. K. (2023). A study of the Effect of Yogic Interventions on Varicose Veins. Journal of Drug Delivery and Therapeutics, 13(1), X1-X4.
2. Zulpe, R., & Sharma, K. K. (2023). Effect of Yoga Therapy on Varicose Vein - A Research Study. Research Journal of Physical Education Sciences. An international peer-reviewed journal: ISSN 2320 – 9011. Manuscript No: ISCA-RJPES-2023-001.

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